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**Peter N. Shanahan**

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**Education**

**Northwestern University**, Ph.D., Physics – February 1995  
Ph.D. Thesis: *A Measurement of the Spin-Dependent Structure Function  $g_1(x)$  of the Deuteron and a Test of the Bjorken Sum Rule.*

**University of Michigan**, B.S., Physics – May 1988

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**Research  
Experience**

**Fermilab**, Associate Scientist on MINOS, April 2001 – Present

- Near Detector Front-end Electronics
- Neutrino Oscillation Physics

**Fermilab**, Research Associate on KTeV, February 1995 – April, 2001

- Analysis of CP Violation in Kaon Decays – Measurement of  $\text{Re}(\epsilon'/\epsilon)$ :
  - Played a leading role in the development of a new analysis technique to measure  $\text{Re}(\epsilon'/\epsilon)$  without relying on a large Monte Carlo based acceptance correction. Lead the  $K_{L,S} \rightarrow \pi^0 \pi^0 \rightarrow 4\gamma$  analysis for this technique.
  - Took a leading role in the calibration of the KTeV electromagnetic calorimeter and the characterization of its performance.
  - Developed a novel technique to perform a 64-parameter calibration of 3100 multiranging ADCs.
  - Performed high precision studies of neutral kaon beam properties critical to  $\text{Re}(\epsilon'/\epsilon)$  analysis.
  - Created an analysis package to distinguish background and signal events based on the scintillation light timing profile of extra photons in the KTeV calorimeter.
- Played a Leading Role in the Development and Commissioning of a New High Speed Readout System:
  - Led development of a full “vertical slice” for readout and calibration test of the KTeV cesium-iodide calorimeter.
  - Tested a number of custom integrated circuit prototypes.
  - Integrated several custom electronic systems into a coherent readout

apparatus.

- Created software for electronic and mechanical control systems in a variety of programming languages.

**Northwestern University**, Research Assistant on the SMC Experiment at CERN, January 1991 – February 1995

- Analysis of Nucleon Spin Structure:
  - Analysis of deep-inelastic scattering spin-asymmetries and spin-dependent structure functions.
- Beam Line:
  - Participated in commissioning and tuning of CERN M-2 polarized muon beam.
  - Responsible for beamline monitoring instrumentation and software, development of high-performance monitoring components.

**University of Michigan**, Laboratory Assistant for Polarized Target Group at Brookhaven National Laboratory, May – September 1998.

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## Academic Honors

**Northwestern University**, University Fellowship, 1988-1989

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## Teaching Experience

- Tutored undergraduates in classical physics, Northwestern University, September 1989 – May 1990.
- Teaching assistant in a laboratory course for advanced physics undergraduates. Topics included computing, electronics, and nuclear and particle physics experiments. Northwestern University, September 1989 – May 1990.
- Supervised and mentored 4 undergraduate summer students working on the KTeV experiment at Fermilab, 1995-1998.
- Mentored participants in a physics education outreach program for local elementary school teachers, Fermilab, August 1998.
- Periodically conducted tours of experiments at Fermilab, for high school students participating in Fermilab science education programs, 1995-2000.

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## Invited Talks

*The Experimental Status of CP Violation in the Kaon System*, Workshop on B Physics at the Tevatron – Run II and Beyond, Batavia, IL, February 24-26, 2000.

*The 1<sup>st</sup>  $Re(\epsilon'/\epsilon)$  Result from KTeV at Fermilab*, Physics in Collision, Ann Arbor, MI, June 24-26, 1999.

*The 1<sup>st</sup> Result on  $Re(\epsilon'/\epsilon)$  from KTeV*, International Workshop on  $e^+e^-$  Collisions from  $\phi$  to  $J/\psi$ , Novosibirsk, Russia, March 1-5, 1999.

*Recent Results from KTeV*, XII Rencontres de Physique de la Vallée d'Aoste, Results and Perspectives in Particle Physics, La Thuile, Italy, March 1-7, 1998.

*The Performance of a New CsI Calorimeter for the KTeV Experiment at Fermilab*, VI International Conference on Calorimetry in High Energy Physics, Frascati, Italy, June 8-14, 1996.

*Measurement of the Spin-Dependent Structure Function  $g_1(x)$  of the Proton*, XXIX Rencontre de Moriond, Meribel, France, March 19-26, 1994.

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## Selected Publications

*Measurement of the Decay  $K_L \rightarrow \pi^0 \gamma \gamma$* ,  
A. Alavi-Harati, *et al.*, Phys. Rev. Lett. **83**:917, 1999.

*Observation of Direct CP Violation in  $K_{S,L}$  to  $\pi\pi$  Decays*,  
A. Alavi-Harati, *et al.*, Phys. Rev. Lett. **83**:22, 1999.

*Measurement of the Spin-Dependent Structure Function  $g_1(x)$  of the Proton*,  
D. Adams, *et al.*, Phys. Lett. **B329**:339, 1994.

*Measurement of Polarization of a High-Energy Muon Beam*,  
B. Adeva, *et al.*, Nucl. Instrum. Meth. **A343**:363, 1994.

*Measurement of the Spin-Dependent Structure Function  $g_1(x)$  of the Deuteron*,  
B. Adeva, *et al.*, Phys. Lett. **B302**:533, 1993.

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## Language

English (first), fluency in French.